

In the Claims

Claims 1-20 (Withdrawn)

21. (Currently amended) An isolated peptide having 4 to 50 amino acids, said peptide comprising a sequence of at least four amino acids defined by formula $P_2P_1\text{--}P_1'P_2'$, wherein:

P_2 comprises an amino acid selected from the group consisting of N, S, and D;

P_1 ~~comprises an amino acid selected from the group consisting of~~ is Y, L, and Nle;

P_1' comprises an amino acid selected from the group consisting of E, A, and D;

P_2' comprises an amino acid selected from the group consisting of A and V; and

wherein a human Aspartyl protease encoded by the nucleic acid sequence of SEQ ID NO: 1 or SEQ ID NO: 3 (Hu-Asp2) cleaves said peptide between P_1 and P_1' ;

~~with the proviso that if P_1P_2' comprise the sequence DA, P_2P_1 do not comprise the sequences NL or NNle.~~

22. Cancelled.

23. (Original claim) An isolated peptide according to claim 21, wherein the Hu-Asp2 cleaves the peptide at a rate greater than the Hu-Asp2 cleaves a corresponding peptide having the $P_2P_1\text{--}P_1'P_2'$ amino acid sequence KMDA.

24. (Cancelled)

25. (Original claim) A peptide according to claim 21, further comprising a label.

26. (Currently Amended) A peptide according to claim 21, further comprising a label and a quenching moiety that quenches the label, wherein the label and quenching moiety are attached

on opposite sides of the P₁--P₁' peptide ~~bind bond~~, whereby cleavage of the P₁--P₁' peptide bond separates the label and quenching moiety.

27. (Currently Amended) A polypeptide comprising:

a) a peptide sequence having 4 to 50 amino acids, said peptide comprising a sequence of at least four amino acids defined by formula P₂P₁--P₁'P₂', wherein:

P₂ comprises an amino acid selected from the group consisting of N, S, and D;

~~P₁ comprises an amino acid selected from the group consisting of is Y, L, and Nle;~~

P₁' comprises an amino acid selected from the group consisting of E, A, and D;

P₂' comprises an amino acid selected from the group consisting of A and V; and

wherein a human Aspartyl protease encoded by the nucleic acid sequence of SEQ ID NO: 1 or SEQ ID NO: 3 (Hu-Asp2) cleaves said peptide between P₁ and P₁';

~~with the proviso that if P₁'P₂' comprise the sequence DA, P₂P₁ do not comprise the sequences NL or NNle; according to claim 21, and~~

(b) ~~further comprising~~ a transmembrane domain to localize the polypeptide to a cellular membrane when the polypeptide is expressed in a eukaryotic cell.

Claims 28-82 (Withdrawn)

83. (New) An isolated peptide comprising a sequence of at least four amino acids defined by formula P₂P₁--P₁'P₂', wherein:

P₂ comprises an amino acid selected from the group consisting of N, S, and D;

~~P₁ comprises an amino acid selected from the group consisting of is Y, L, and Nle;~~

P₁' comprises an amino acid selected from the group consisting of E, A, and D;

P₂' comprises an amino acid selected from the group consisting of A and V; and

wherein a human Aspartyl protease encoded by the nucleic acid sequence of SEQ ID NO: 1 or SEQ ID NO: 3 (Hu-Asp2) cleaves said peptide between P₁ and P₁';

~~with the proviso that if P₁'P₂' comprise the sequence DA, P₂P₁ do not comprise the sequences NL or NNle;~~

and wherein said peptide further comprises a detectable label and a quenching moiety, wherein cleavage of the peptide between P1 and P1' separate the quenching moiety from the label to permit detection of the label.

84. (New) The isolated peptide according to claim 83, wherein the peptide amino acid sequence consists of 4-50 amino acids.

85. (New) The isolated peptide according to claim 83, wherein the Hu-Asp2 cleaves the peptide at a rate greater than the Hu-Asp2 cleaves a corresponding peptide having the P₂P₁--P₁'P₂' amino acid sequence KMDA.

86. (New) An isolated peptide having 6 to 50 amino acids, said peptide comprising a sequence of at least six amino acids defined by formula P₃P₂P₁--P₁'P₂'P₃', wherein:

P₃ comprises an amino acid selected from the group consisting of A, V, I, S, H, Y, T and F;

P₂ comprises an amino acid selected from the group consisting of N, S, and D;

P₁ ~~comprises an amino acid selected from the group consisting of~~ is Y, L, and Nle;

P₁' comprises an amino acid selected from the group consisting of E, A, and D;

P₂' comprises an amino acid selected from the group consisting of A and V;

P₃' comprises an amino acid selected from the group consisting of E, G, F, H, cysteine acid and S; and

wherein a human Aspartyl protease encoded by the nucleic acid sequence of SEQ ID NO: 1 or SEQ ID NO: 3 (Hu-Asp2) cleaves said peptide between P₁ and P₁';

~~with the proviso that if P₁'P₂' comprise the sequence DA, P₂P₁ do not comprise the sequences NL or NNle.~~

87. (New) The isolated peptide of claim 86, wherein said peptide further comprises a detectable label and a quenching moiety, wherein cleavage of the peptide between P1 and P1' separate the quenching moiety from the label to permit detection of the label.

88. (New) The isolated peptide according to claim 86, wherein the Hu-Asp2 cleaves the peptide at a rate greater than the Hu-Asp2 cleaves a corresponding peptide having the $P_2P_1--P_1'P_2'$ amino acid sequence KMDA.

89. (NEW) An isolated peptide having 4 to 50 amino acids in length comprising a sequence of at least four amino acids defined by formula $P_2P_1-P_1'P_2'$, wherein:

P_1 is Y;

P_2 comprises an amino acid selected from the group consisting of N, S, and D;

P_1' comprises an amino acid selected from the group consisting of E, A, and D;

P_2' comprises an amino acid selected from the group consisting of A and V; and

wherein a human aspartyl protease encoded by the nucleic acid sequence of SEQ ID NO: 1 or SEQ ID NO: 3 (Hu-Asp2) cleaves said peptide between P_1 and P_1' .

90. (New) The isolated peptide of claim 89, comprising a sequence of amino acids defined by the formula $P_3P_2P_1-P_1'P_2'$, wherein P_3 comprises an amino acid selected from the group consisting of is selected from the group consisting of I, V and L.

91. (New) The isolated peptide of claim 90, comprising a sequence of amino acids defined by the formula $P_4P_3P_2P_1-P_1'P_2'$, wherein P_4 is selected from the group consisting of I, V, and L.

92. (New) The isolated peptide of claim 89, wherein said peptide comprises a sequence of $P_3P_2P_1-P_1'P_2'P_3'$, wherein P_3 is I or V, P_1' is E, P_2' is V and P_3' is E.

93. (New) The isolated peptide of claim 89, wherein said peptide comprises a sequence of $P_3P_2P_1-P_1'P_2'P_3'$, wherein P_3 is I or V, P_1' is A, P_2' is V and P_3' is E.

94. (New) The isolated peptide of claim 89, wherein said peptide comprises a sequence of $P_3P_2P_1-P_1'P_2'P_3'$, wherein P_3 is I or V; P_1' is D, P_2' is V and P_3' is E.
95. (New) The isolated peptide of claim 89, wherein said peptide comprises a sequence of $P_3P_2P_1-P_1'P_2'P_3'$, wherein P_3 is I or V; P_1' is D, P_2' is A and P_3' is E.
96. (New) The isolated peptide of claim 21, wherein said peptide comprises a sequence of SEISY-EVEFR (SEQ ID NO:152).
97. (New) The isolated peptide of claim 21, wherein said peptide comprises a sequence of SEISY-EVEFRWKK (SEQ ID NO:158).
98. (New) The isolated peptide of claim 21, wherein said peptide comprises a sequence of SEIDY-EVEFR (SEQ ID NO:153).
99. (New) The isolated peptide of claim 21, wherein said peptide comprises a sequence of GLTNIKTEEISEISY-EVEFRWKK (SEQ ID NO:191).
100. (New) The isolated peptide of claim 21, wherein said peptide comprises a sequence of TEIDY-EVEFR (SEQ ID NO:151).
101. (New) The isolated peptide of claim 21, said peptide comprises a sequence of SEVDY-EVEFR (SEQ ID NO:149).